

**PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference P16867PCAU ALH:MB	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).	
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International Patent Classification (IPC) or national classification and IPC Int. Cl. 7 A23K 1/00; 1/165; 1/175; A23L 1/00			
Applicant EFFEM FOODS PTY LTD et al			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 12 sheet(s).

3. This report contains indications relating to the following items:

I	<input checked="" type="checkbox"/> Basis of the report
II	<input type="checkbox"/> Priority
III	<input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	<input type="checkbox"/> Lack of unity of invention
V	<input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	<input type="checkbox"/> Certain documents cited
VII	<input type="checkbox"/> Certain defects in the international application
VIII	<input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 3 April 2001	Date of completion of the report 28 August 2001
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer  MADHU K. JOGIA Telephone No. (02) 6283 2512

I. Basis of the report

1. With regard to the elements of the international application:*

the international application as originally filed.

the description, pages 1-5, 11-31, as originally filed,
pages , filed with the demand,
pages 6-10, received on 20.07.2001 with the letter of 16.07.2001

the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages 32-38, received on 22.08.2001 with the letter of 16.08.2001

the drawings, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of

the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

the language of publication of the international application (under Rule 48.3(b)).

the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

contained in the international application in written form.

filed together with the international application in computer readable form.

furnished subsequently to this Authority in written form.

furnished subsequently to this Authority in computer readable form.

The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. The amendments have resulted in the cancellation of:

the description, pages

the claims, Nos.

the drawings, sheets/fig.

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-26	YES
	Claims	NO
Inventive step (IS)	Claims 1-26	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-26	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

Novelty (N) and Inventive Step (IS) Claims 1-26

The present invention relates to packaged food products for regular feeding of mammal pet animals and which contain functional additives to enhance specific health aspects of the pet animal. Further, claim 1 is limited to a selection of additives of plant extracts including sugar beet pulp and slippery elm. This combination and other combinations as defined in independent claims 4, 7 and 11 do not appear to be disclosed or taught in the art.

The closest prior art in relation to the use of plant extracts as pet food appears to be WO 97/29763, pages 1-5. This document also discloses the use of further additives including glucosamine and gluconate which additives fall within the scope of the additives as defined in claim 1 at least of your application.

However, the combination of these additives is neither disclosed nor obvious from the prior art documents.

Therefore the invention as defined in claims 1-26 appears to be novel and involves an inventive step.

Industrial applicability (IA) Claims 1-26

The invention appears to possess industrial applicability.

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PART 34 AMDT

Summary of the Invention

Accordingly, in a first aspect of the invention, there is provided a commercially packaged mammal pet food product that includes a manufactured, shelf-life stable food substrate and a combination of functional additives. The functional additives include at least one non-palatable plant-based remedy and/or dietary fibre source that are present to strengthen and/or maintain a specified health indicator of a mammal pet animal, wherein the food product is portioned and packaged with the functional additives being present in predetermined concentrations and amounts sufficient to be effective in achieving said indications on regular feeding of the pet animal with said food product, and wherein said food substrate is present in a proportion sufficient to mask the flavour and/or odour of the non-palatable additive.

Depending on the specific functional additives that are present, the composition of the food substrate may vary, as is explained below in greater detail.

An acceptable palatability measure is given where no more than 10%, but preferably 5%, of the product is refused when offered to the animal over a 7 day period on a regular and/or exclusive basis.

In addition to the relevant functional additives, other active dietary supplements known to have, individually, specific health-improving properties, such as vitamins, mineral supplements and the like, may be incorporated into the packaged product. In order to achieve and maintain a specific health indication in accordance with the invention, additional functional additives in the form of plant materials that provide a source of natural dietary fibre and/or 25 herbal remedies that exhibit a medicinal and/or therapeutic benefit are incorporated in specified quantities/amounts into the pet food product during its manufacture.

Accordingly, in a second aspect of the invention, the functional additives of the pet food product are intended to address dietary flatulence problems and will include a combination of Yucca extract (eg Yucca Shidigera or Elata), charcoal and salts of zinc, such as zinc acetate, said functional additives being provided in amounts sufficient to reduce flatulence odour when

the pet food product is provided to a pet animal on a daily basis. It has been observed that the use of any two of these functional additives in combination results in reduction of flatulence odour, with the specific combinations of zinc acetate and charcoal or zinc acetate, charcoal and Yucca extract showing 5 certain synergistic effects. Preferably, these functional additives are provided in the following amounts, the balance being made up by the food substrate and other normal nutritional supplements:

- Yucca Shidigera or Elata extract – from about 0.04 to about 0.11% by weight of finished product, preferably 0.05%;
- 10 • Vegetable charcoal – from about 5 to about 14% by weight of finished product, preferably 6%;
- zinc acetate – from about 0.3 to about 0.8% by weight of finished product, preferably 0.32%.

The recommended daily ingestion of these, combined functional 15 additives to achieve the desired flatulence reducing health benefits will generally be within the following range of finished product mass:

Animal Mass	Daily Dosage
< 7kg	2.5g
7 – 14kg	5.0g
15 – 25kg	10g
> 25kg	20g

In a third aspect of the invention, the functional additives will include a combination of L-glutamine, D-glucosamine sulphate, sugar beet pulp, slippery 20 elm (*Ulmus Fulva*) and optionally inulin, said functional additives being provided in amounts sufficient to promote or maintain gastro-intestinal health when the pet food product is provided to the pet animal on a daily basis.

These functional additives are preferably provided in the following amounts, the balance being made up by the food substrate and other normal 25 nutritional supplements:

- L-glutamine – from about 3 to about 5% by weight of finished product;

- D-glucosamine sulphate – from about 3 to about 5% by weight of finished product;
- sugar beet pulp – from about 4 to about 8% by weight of finished product;
- 5 • if present inulin – from about 3.0 to about 4.5% by weight of finished product; and
- slippery elm – from about 1.5 to about 2.5% by weight of finished product.

It is particularly preferred that the above functional additives are
10 provided in the following amounts:

- L-glutamine – about 4% by weight of finished product;
- D-glucosamine sulphate – about 4% by weight of finished product;
- sugar beet pulp – about 6% by weight of finished product;
- inulin – about 3.9% by weight of finished product; and
- 15 • slippery elm – about 2% by weight of finished product.

The recommended daily ingestion of these, combined functional additives to achieve the desired gastro-intestinal health benefit will generally be within the following range of finished product mass:

Animal Mass	Daily Dosage
< 7kg	2.5g
7 – 14kg	5.0g
15 – 25kg	10g
> 25kg	20g

20 In a fourth aspect of the invention, the functional additives include a combination of vitamin E, vitamin B complex, primrose oil (e.g. Oenothera Biennis), vitamin C and Marigold meal (e.g. Calendula Officinalis). The functional additives are provided in amounts sufficient to strengthen or maintain a pet animal's natural body defences (immune system function) when
25 the pet food product is provided to the pet animal on a daily basis. These functional additives are preferably provided in the following amounts, the

balance being made up by the food substrate and other normal nutritional supplements:

- vitamin E – about 1.0 to about 2.5% by weight of finished product, preferably about 2%;
- 5 • vitamin B complex – about 0.10 to about 0.25% by weight of finished product, preferably 0.2%;
- evening primrose oil – about 0.7 to about 2.5% by weight of finished product, depending on the essential oil content, preferably about 0.8%;
- 10 • vitamin C – about 0.5 to about 3% by weight of finished product, preferably about 2.5%;
- marigold meal – about 0.4 to about 0.8% by weight of finished product, preferably about 0.6%.

15 The recommended daily ingestion of these, combined functional additives to achieve the desired immune system benefits will generally be within the following range of finished product mass:

Animal Mass	Daily Dosage
< 7kg	2.5g
7 – 14kg	5.0g
15 – 25kg	10g
> 25kg	20g

20 In a fifth aspect of the invention, the functional additives will include a combination of Valerian root extract (e.g. Valerian Officinalis), Kava root extract (Piper Methysticum), vitamin B complex and magnesium (in a digestible salt form). The functional additives being provided in amounts sufficient to promote or maintain reduction of stress and/or improved behavior of a pet animal when the pet food product is provided to the pet animal on a daily basis. In addition to or in partial substitution for Valerian root extract 25 and/or Kava root extract, Gingko Biloba extract and St John's Wort extract (Hypericum Perforatum) may be added in a physiological relevant amount to develop their known nerve calming properties.

It is preferred that the functional additives are provided in the following amounts, the balance being made up by the food substrate and other normal nutritional supplements:

- Valerian root extract – from about 0.3 to about 1% by weight of finished product;
- if present, Gingko Biloba extract – from about 0.1 to about 1.3% by weight of finished product;
- if present, St John's Wort extract – from about 0.1 to about 1.3% by weight of finished product;
- Kava root extract – from about 0.3% to about 3.0% by weight of the finished product;
- vitamin B complex – from about 0.5 to about 3.0% by weight of finished product;
- magnesium salt – from about 0.5 to about 2.5% by weight of finished product.

In particular, it is preferred that the above functional additives are provided in the following amounts:

- Valerian root extract – about 0.4% by weight of finished product (depending on the concentration of the pure essence);
- Kava root extract – about 2% by weight of the finished product;
- vitamin B complex –about 2.5% by weight of finished product;
- magnesium sulphate –about 1.8% by weight of finished product.

The recommended daily ingestion of these, combined functional additives to achieve the stress reduction health benefit will generally be within the following range of finished product mass:

Animal Mass	Daily Dosage
< 7kg	2.5g
7 – 14kg	5.0g
15 – 25kg	10g
> 25kg	20g

CLAIMS:

1. A packaged, treat-size, mammal pet food product, including:
 - a manufactured food substrate; and
- 5 • a combination of functional additives, of which at least one is a non-palatable plant extract and/or dietary fibre source that are present to strengthen and/or maintain a specified health indicator of a mammal pet animal, wherein the food product is portioned and packaged with at least one functional additive being present in a pre-determined concentration and
- 10 amount sufficient to be effective in achieving said indicator on regular feeding of the pet animal with said food product, and wherein said food substrate is present in a proportion sufficient to mask the flavour and/or odor non-palatable additives.
- 15 2. A packaged pet food product according to claim 1, wherein the functional additives include L-glutamine, D-glucosamine sulphate, sugar beet pulp, slippery elm and as an optional additive inulin, said functional additives being present in amounts sufficient to promote or maintain gastro-intestinal health when the pet food product is ingested by a pet animal on a regular, preferably daily basis.
- 20 3. A packaged pet food product according to claim 2, wherein the functional additives are provided in the following amounts, by weight of finished product, the balance being made-up by the manufactured food substrate and other nutritional supplements:
 - L-glutamine – from about 3 to about 5%;
 - D-glucosamine sulphate – from about 3 to about 5%;
 - sugar beet pulp – from about 4 to about 8%;
 - inulin, if present – from about 3.0 to about 4.5%; and
- 25 30 • slippery elm – from about 1.5 to about 2.5%.

4. A packaged pet food product according to claim 3, wherein the functional additives are provided in the following amounts: L-glutamine – about 4%, D-glucosamine sulphate – about 4%, sugar beet pulp – about 6, slippery elm – about 2%.

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5. A packaged pet food product according to claim 1, wherein the functional additives include a combination of vitamin E, vitamin B complex, ~~evening primrose oil~~, vitamin C and marigold meal, said functional additives being present in amounts sufficient to strengthen or maintain a pet animal's natural body defences (immune system function) when the pet food product is provided to the pet animal on a regular, preferably daily basis.

6. A packaged pet food product according to claim 5, wherein the functional additives are provided in the following amounts, by weight of finished product, the balance being made up by the manufactured food substrate and other nutritional supplements;

- vitamin E – about 1.0 to about 2.5%;
- vitamin B complex – about 0.10 to about 0.25%;
- ~~evening primrose oil~~ – about 0.7 to about 2.5%;
- vitamin C – about 0.5 to about 3.0%;
- marigold meal – about 0.4 to about 0.8%.

7. A packaged pet food product according to 6, wherein the functional additives are provided in the following amounts: vitamin E – about 2%, vitamin B complex – about 0.2%, ~~evening primrose oil~~ – about 0.8%, vitamin C – about 2.5% and marigold meal – about 0.6.

8. A packaged pet food product according to claim 1, wherein the functional additives include Valerian root extract, Kava root extract, vitamin B complex and a magnesium salt, said functional additives being present in amounts sufficient to promote or calmness and/or improved behaviour of a pet

animal when the pet food product is provided to the pet animal on a regular, preferably daily basis.

9. A packaged pet food product according to claim 8, wherein in addition
5 to or in partial substitution for Valerian root extract and/or Kava root extract, Gingko Biloba extract and St John's Wort extract is present in physiological relevant amounts.

10. A packaged pet food product according to claim 8 or 9, wherein the
10 functional ingredients are provided in the following amounts, by weight of finished product, the balance being made-up by the manufactured food substrate and other nutritional supplements;

- Valerian root extract – from about 0.3 to about 1.0%;
- Kava root extract – from about 0.3 to about 3%;
- 15 • if present, Gingko Biloba extract – from about 0.1 to about 1.0%;
- if present, St John's Wort extract – from about 0.1 to about 1.0%;
- vitamin B complex – from about 0.5 to about 3.0%; and
- magnesium salt – from about 0.5 to about 2.5%.

20 11. A packaged pet food product according to claim 10, wherein the functional additives are provided in the following amounts:

- Valerian root extract –about 0.4%;
- Kava root extract – about 2%;
- vitamin B complex –about 2.5%;
- 25 • magnesium sulphate –about 1.8%.

12. A packaged pet food product claim 1, wherein the functional additives include two or more additives selected from the group consisting of Yucca extract, vegetable charcoal and salts of zinc acetate, said functional additives 30 being present in amounts sufficient to reduce flatulence odour when the pet food product is provided to a pet animal on a regular, preferably daily basis.

13. A packaged pet food product according to claim 12, wherein the functional additives are provided in the following amounts, by weight of finished product, the balance being made-up by the manufactured food substrate and other nutritional supplements:

5 • Yucca Shidigera or Elata extract – from about 0.05 to about 0.11%, preferably 0.06%;
• Vegetable charcoal – from about 6 to about 14%, preferably 6%; and
• zinc acetate – from about 0.3 to about 0.8%, preferably 0.4%.

10 14. A packaged pet food product according to claim 3, 6, 10 or 13, wherein the food substrate includes dry ingredients comprising animal protein, carbohydrates and an anti-microbial agent, and at least one liquid ingredient in a predetermined ratio to the sum of the dry ingredients.

15 15. A packaged pet food product according to claim 4,7 or 11, wherein the food substrate includes dry ingredients comprising animal protein, carbohydrates and an anti-microbial agent, and at least one liquid ingredient in a predetermined ratio to the sum of the dry ingredients

20 16. A packaged pet food product according to claim 14 or 15, wherein the animal protein constitutes from about 17% to 50% by weight of the dry ingredients.

25 17. A packaged pet food product according to claim 16, wherein the animal protein is derived from beef, pork, mutton, poultry, fish or a combination of these.

30 18. A packaged pet food product according to claim 17, wherein the animal protein includes gelatins.

19. A packaged pet food product according to claim 14, 15, 17 or 18, wherein the carbohydrates include simple and complex carbohydrates.

19. A packaged pet food product according to claim 14, 15, 17 or 18, wherein the carbohydrates include simple and complex carbohydrates, wherein the complex carbohydrates include rice flour, and wherein the simple carbohydrates include glucose, glycerol and/or sugar.

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20. A packaged pet food product claim 14, 15, 17 or 18, wherein the antioxidant is rosemary extract.

10 21. A packaged pet food product according to claim 14 or 15, wherein the water constitutes about 10 to about 20% by weight of the finished product.

22. A packaged pet food product in accordance with claim 16, in the form of a palatable, 'treat'-sized, chewy tablet, including the following ingredients in proportions by weight of finished product:

15 • gelatine – from about 3 to about 7%;
• glucose – from about 2 to about 5%;
• sugar – from about 2 to about 5%;
• glycerol – from about 1 to about 4%;
• potassium sorbate – from about 0.2 to about 0.5%;
20 • rosemary extract – from about 0.01 to about 0.05%,
• water – from about 10 to about 20%; and
• the balance being composed of pulverised meat (approx 50%), cereal flour (approx 11%), sugar (approx 8%), glycerine (approx 9%), citric acid (approx 1%) and preservatives (approx 0.1%).

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23. A packaged pet food product according to claim 22, wherein the product is provided in the form of a biscuit or multi-piece biscuit that is easily divisible so as to facilitate administration to a pet animal of a desired amount of the product corresponding with a desired dosage of the functional additives.

30

24. A packaged pet food product according to claim 22, wherein the product is provided in the form of a food bar, having substantially uniform

concentration of the functional additives throughout the length thereof, and wherein the food bar includes markings, etchings or the like for indicating where the food bar may be broken so as to provide the pet animal with a desired dosage of the functional additives.

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25. A process for manufacturing a palatable, treat-sized pet food product according to claim 14 or 15, including the steps of:

- mixing dry ingredients including animal protein, carbohydrates and an antimicrobial agent;
- 10
 - heating the dry ingredient mixture to between 50 to 80°C, preferably about 60°C, for about 5 to 15 minutes, preferably about 10 minutes;
 - adding the functional additives to the dry ingredient mixture;
 - mixing the resultant mixture for about 5 minutes;
 - heating, in a separate container liquid ingredients, including water and
- 15 an antioxidant, to between 60 to 85°C, preferably about 75 °C;
- adding the heated liquid ingredients to the resultant mixture to obtain a moistened mixture;
 - heating the moistened mixture to between 60 to 80°C, preferably about 75°C, for about 5 minutes to obtain a processed mixture;
- 20
 - substantially immediately after the heating step subjecting the processed mixture to a cooling step to achieve product temperature of between 40 to 60°C, preferably about 50°C; and moulding the cooled mixture by impression moulding or cutting techniques so as to form a packagable product of predetermined size, shape and weight.

26. The process of claim 25, further including the step of making markings, etchings or the like on the packagable product so as to enable the product in use, to be easily broken into pieces of a particular size.

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DATED this 6th day of September 2000

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